

0005

**From:** Priscilla Burton  
**To:** Darby, David; Grubaugh-Littig, Pam; Smith, Jim  
**Date:** 8/17/2007 12:39 PM  
**Subject:** C/025/0005 Task 2814 Overburden  
**Attachments:** E\_PCollins Overburden\_20070817123940.pdf

*Outgoing*  
*C/025/0005*

On February 2, 2006, Patrick Collins requested guidance on sampling parameters for overburden cores. His initial request is saved as document #0001.pdf in M:\FILES\COAL\PERMITS\025\X0250004\2006\INCOMING. —

I have scanned in a copy of the Division's response to Mr. Collins, dated February 7, 2006.  
Pam, please send this email to file.

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**From:** Jim Smith  
**To:** mt.nebo@xmission.com  
**Date:** 2/7/2006 2:15:04 PM  
**Subject:** Re: Overburden

Hello Patrick,

After discussing this with Priscilla and Dave Darby, our RECOMMENDATION is that, because this is a new area, samples be composited over 10-ft intervals\*, one suite of samples from the shallowest hole and another suite from the deepest hole, and analyzed for the parameters in the Division's Soils Guideline\*\* plus boron and selenium, and for the ground water baseline metals listed in the Divisions water monitoring guideline Tech-004.

We discussed the utility of analyzing for uranium and vanadium, considering the well known presence of these elements in the Colorado Plateau. Just to be safe, you might use a radiation counter to determine if there are sections with radiation above background level, and if there are, have them analyzed for radioactive elements.

\*If there are lithologic units thinner than 10 ft, do a composite of each lithologic stratum.

\*\*I think Priscilla already sent you copies of the Montana and New Mexico guideline, but copies are attached, along with the latest version of the Division's guideline. The Division's old "Guidelines for the Management of Topsoil; and Overburden for Underground and Surface Coal Mines" (Leatherwood 1988) contains recommendations on overburden sampling and hole spacing, drilling methods, sampling depth intervals, sample preparation, and analytical procedures: sorry, I don't have an electronic version of the old guideline.

JIM

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>>> Priscilla Burton 02/02/2006 3:19 PM >>>

Hello Patrick,

I had a long conversation with Julian Calabrese, Soil Scientist, Montana DEQ (406) 444-4276. Montana requires that overburden samples include all of the parameters for the baseline soil information as well as Se, B, acid/base acct'g, Nitrate nitrogen, and Mo (due to the particular geology in MT). The analysis is done on composited samples of intervals no greater than 10 ft within each strata. The minimum composited depth is two ft.

In other words, each strata is represented by at least one composited sample. If the strata extends over thirty feet, then a minimum of three composite samples are required. If the strata is less than 2', then a 2' sample would be composited.

I spoke with Jim Smith (DOGM) and we agreed that we would follow Montana's lead of requiring composite samples by depth. For these first six holes, we would like to see the samples composited by 5 ft intervals within each strata. We would like to have the samples analyzed for pH, EC, SAR, texture, B, Se, acid/base acct'g, nitrate nitrogen, and total metals. The latter is added because we are unfamiliar with metals of concern, such as molybdenum, that could exist in the Utah geology.

Since there is no information on the first 40 ft of overburden from these holes, we will likely require additional sampling of the surface 40' during operations, since the surface 40 ft will be inverted and may contact groundwater.

Attached is a copy of the Montana guidelines.  
I have a call in to my contact at the New Mexico Mining and Minerals.  
Priscilla

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>>> Patrick Collins <[mt.nebo@xmission.com](mailto:mt.nebo@xmission.com)> Thursday, February 02, 2006 1:48 PM >>>  
Hi Priscilla:

Any more thoughts about depth increments for the overburden samples?

Patrick

CC: David Darby; Priscilla Burton

Phone call to Patrick  
Collins on 2/8/06  
to confirm:  
use table #3 except %om  
use table #8  
+ metals of concern in  
Tech 004 g H<sub>2</sub>O  
+ measure and record  
radiation in all cores.  
If elevated levels, then  
analyze for radiation  
 $\alpha$ ,  $\beta$ ,  $\gamma$ .

[Energy Labs - Billings]